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EXAMINER	
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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 13

Application Number: 09/178,249
Filing Date: October 23, 1998
Appellant(s): JIN ET AL.

Carlton H. Hoel
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed December 3, 2001.

(1) Real party in interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The brief does not contain a statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief. Therefore, it is presumed that there are none. The Board, however, may exercise its discretion to require an explicit statement as to the existence of any related appeals and interferences.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

Appellant's brief includes a statement that claims 1-2 and 5-6 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) References of Record

5,955,140	Smith et al.	11-1996

5,650,361 . Radhakrishnan 11-1995

(10) Grounds of Rejection

Claims 1-2 and 6 are rejected under 35 U.S.C. 102(e) as being anticipated by Smith et al.

In view of claim 1, Smith et al. discloses making a dielectric layer by applying a thin film aerogel on a substrate where the layer is catalyzed by using a precusor of ammonia nitrate (Col.24 lines 18-20). The ammonia is converted into a vapor form to flow over the precusor to form a dielectric layer (Col. 31 lines 5-10).

In view of claim 2, Smith et al. uses ammonia in a catalyst to accelerate the setting of the dielectric(Col. 31 lines 4-6).

In regard to claim 6, Smith et al. describes the use of a polymer based oligomer from silicon alkoxides in the making of a dielectric (Col. 31 lines 30-40) layer.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. in view of Radhakrishnan. Smith et al. discloses using gel materials for semiconductor thin dielectric films (Col. 3 lines 23-27) with an ammonia based catalyst to speed up set times (Col. 12 lines 10-23). Furthermore, Smith et al. teaches that ammonia can be introduced into a circular environment, but fails to teach its introduction through a central axis. Furthermore, Fig. 19c of Smith et al. appears to show ammonia introduced at a central axis with radial flow but is not expressly taught. Radhakrishnan discloses the vapor flow of ammonia is released through the central axis of the system (Fig. 1). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the teachings of Smith et al. with those of Radhakrishnan with the expectation of achieving better coverage results, since centrally located gas transports offer better target coverage than those that only offer perimeter gas flows.

(11) Response to Argument

In order to sustain a rejection under 35 U.S.C. 102, each and every limitation must be taught in the reference. Smith et al. discloses a dielectric layer made by applying a layer of dielectric precursor on a body by using a vapor or mist to "flow" the precursor reaction catalyst over the layer in order to form a dielectric layer. Thus all the elements of Smith et al. are disclosed in the Jin et al. application. The question is does Smith et al. "flow" the catalyst over the layer in the same manner as Jin et al., although "flow" is not stated expressly.

By definition, flowing is a) to move with a continual change of place among the constituent particles b) to circulate c) to move in a stream.

In a liquid or fluid, the particles thereof move as well, but slower, and therefore even slower for solid matter. In a fluid, the particles can move or flow in one uniform direction if the fluid is "poured", or an action performed thereon. Smith et al. uses a fluid in the context of a gel, which is a solid skeleton enclosing a liquid phase (Col. 2 lines 30-35), and not in the context of a catalyst. Smith et al. clearly uses vapor in the context of a catalyst (Col. 8 lines 45-50). When Smith et al. adds the catalyst (Col. 31 lines 5-10) as a vapor, mist or other vaporish form, does it or does it not flow? A vapor is a gaseous state of matter, as opposed to a liquid or solid matter, which the particles thereof are continually in motion, because an action performed thereon. So, by definition, the vapor added by Smith et al. fulfills the criteria of a) because of the continuous motion of the constituent particles. But does it circulate or move in a stream, as required by definition b and c? The vapor of perfume in a closed room moves through the air because we eventually smell it.. So, this implies a slight directional component to flowing, both in general and as employed by Smith et al. To clearly see the direction of the vapor flow, look at Figure 19C in Smith et al. Vapor is injected (or action performed) in a closed chamber (#32) from the atmospheric adjustment means (#44) and circulates or permeates the air in the chamber. The vapor is actually in motion toward the substrate (#26), until it equalizes throughout the chamber, so there is an initial vapor flow caused by diffusion through the air. But furthermore, because Smith et al. can adjust the pressure of the chamber or "**exchange** the atmosphere", that flowing (Col. 27 lines 53-60) of the vapor is stream-like and continuous in the chamber system, and therefore fulfills criteria b and c, and thus all criteria set by definition.

Furthermore, Smith et al. uses a vapor and mist to cover the wafer to form a dielectric (Col. 31 lines 5-10). Jin et al. uses a flowing process to cover the wafer and form a dielectric. Both Smith and Jin used a container to hold the catalyst (Fig. 19c v Fig. 1h). Both employ a tube in which the catalyst moves through to arrive at the chamber from the container, which contains the wafer that both inventors deploy. Both end up with a dielectric layer.

Finally, the appellants in the argument supplied, suggest that Smith et al. would likely add a vapor catalyst (Col. 31 lines 5-10). The appellants themselves allude to a system that allows wide control of ammonia to water vapor ratios (Pg. 7 lines 20-22), where in both cases the vapor must be flowed.

Therfore, it is vigorously asserted that each and every element of appellant's claims 1, 2 and 6 are disclosed or anticipated by Smith et al.

Further, in order to sustain a rejection under 35 U.S.C. 103 the Courts have created a 3-step test under John Deere. First, one must determine the scope and content of the prior art. Second, the differences between the prior art and the claims are to be ascertained. And lastly, the level of ordinary skill in the art is to be determined. In other words, for maintaining a rejection under 35 U.S.C. 103, the examiner must detail the relevant teachings of the prior art, the differences between the claims and the applied references and why one of ordinary skill in the art at the time of the invention would have been motivated to make the proposed combination or modification. The examiner has shown that Smith et al. teaches that a dielectric layer is made by applying a layer of dielectric precursor on a body by using a vapor or mist to "flow" the precursor reaction catalyst over the layer in order to form a dielectric layer. Smith et al. appears to show an ammonia introduced into a central axis, but lacks expressly, a teaching on a central axis gas introduction. Radhakrishnan discloses the ammonia vapor flowing through the central axis of the system. Radhakrishnan has a mass controller (Fig. 1 #46) for precusor injection coming into the top of the chamber (#14) and exiting through the bottom exhaust pump (#32). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the teachings of Smith et al. with those of Radhakrishnan with the expectation of achieving better and more uniform coverage results. It would appear obvious that a centrally located gas transport system would

offer better and faster coverage of the intended target, than one located on the periphery, because of the wait time for the gas to diffuse to all parts of the intended target, if it were covered entirely.

Furthermore, this is a central exhaust in the *lower* portion of the chamber and not a central exhaust in the upper portion of the chamber. The appellants clearly fail to make this claim. Further still, the appellants fail to notice another mass controller (#24) on the periphery of the chamber.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

gl - Granvill D Lee Jr.
March 25, 2002

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